WE CLAIM:

1. A fluorescence detector comprising:
   a) a light source for exciting specific fluorophores located on a biopolymer array;
   b) means for directing said light source into said waveguide support to cause total internal fluorescence in said waveguide support; and
   c) a charge couple device for detecting emission spectra.

2. The fluorescence detector of claim 12, wherein said light source generates a laser beam.

3. The fluorescence detector of claim 12, wherein said light source generates multiple spectrally distinct laser beams.

4. The fluorescence detector of claim 12, wherein said light source is comprised of four spectrally distinct laser beams.

5. The fluorescence detector of claim 12, further comprising a transparent hexahedron, wherein said transparent hexahedron revolves around an axis perpendicular to said light beam for placing said light source into said waveguide support.

6. The fluorescence detector of claim 12, further comprising an optical wedge, wherein said optical wedge revolves around an axis approximating said light beam for placing said light source into said waveguide support.

7. The fluorescence detector of claim 12, further comprising a cylindrical lens for focusing said light beam into a shape smalled than an edge of said waveguide, wherein said light beam is entering said waveguide at said edge.

8. The fluorescence detector of claim 12, further comprising a mirror for directing said light beam into said waveguide support.

9. The fluorescence detector of claim 12, further comprising a diffraction grating for directing said light beam into said waveguide support.

10. The fluorescence detector of claim 12, further comprising an optical prism for directing said light beam into said waveguide support.

11. The fluorescence detector of claim 12, further comprising a transparent liquid placed between said waveguide support and said optical prism, wherein said transparent liquid possesses a refractive index about equal to the refractive indices possessed by said waveguide support and said optical prism.

12. The fluorescence detector of claim 12, wherein said waveguide support has a polished edge in which said light beam enters said waveguide support to illuminate said waveguide support broadly.

13. The fluorescence detector of claim 12, wherein said waveguide support has a frosted edge in which said light beam enters said waveguide support to illuminate said waveguide support broadly.

14. The fluorescence detector of claim 12, further comprising bandpass filters for separating emission spectra.

15. The fluorescence detector of claim 12, further comprising a personal computer to collect and analyze emission spectra.

16. A method for detecting and analyzing a specific nucleic acid sequence comprising:

a) inserting a waveguide support into a fluoresecence detector, said waveguide support being spatially situated between a light source and a charge couple device in said fluorescence detector, wherein said waveguide support possesses an array of affixed oligonucleotides, wherein at least one said oligonucleotide possesses one fluorescent nucleotide;

b) exciting said fluorescent nucleotide by directing said light source to said waveguide support;

c) detecting emission from said fluorescent nucleotide with said charge couple device; and

d) analyzing said emission on a personal computer.

17. A method of analyzing the sequence of a polynucleotide of interest, comprising the steps of:

a) attaching an array of oligonucleotide primers having known sequences to a solid support at known locations, wherein said solid support may act as a waveguide;

b) hybridizing the polynucleotide of interest to the array of oligonucleotide primers to generate double stranded oligonucleotides;

c) subjecting the double stranded oligonucleotides to a sequence specific single base polymerization reaction to extend the annealed primers by the addition of a fluorescently – labelled terminating nucleotide, wherein said primers may be extended by any fluorescently – labelled terminating nucleotide which is complimentary to the polynucleotide of interest;

d) removing the polynucleotide of interest from the array of oligonucleotide primers;

e) inserting said support into a fluoresecence detector, wherein said support is spatially situated between a light source and a charge couple device in said fluorescence detector, wherein said light source is able to specifically excite each fluorescently-labelled nucleotide sequentially;

f) exciting said fluorescent nucleotide by directing said light source into said support;

g) detecting emission from said fluorescent nucleotide with said charge couple device; and

h) analyzing said emission on a personal computer.